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E7.4-10441

CR-137424

Fourth Quarterly Progress Report  
(January - March 1974)

for

"A Cloud Physics Investigation  
Utilizing Skylab Data"

Prepared for: Principal Investigator  
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Code TF6  
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National Oceanic and Atmospheric Administration  
National Environmental Satellite Service  
FOB #4  
Washington, D.C. 20233

Co-Investigators: Dr. Herbert Jacobowitz  
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EREP - 9611

Purchase Order No. T-4715B

(E74-10441) A CLOUD PHYSICS  
INVESTIGATION UTILIZING SKYLAB DATA  
Quarterly Progress Report, Jan. - Mar.  
1974 (National Environmental Satellite  
Service) 4 p HC \$4.00

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Progress during the present reporting period was rather limited due to difficulties encountered in analyzing the S191 data. This will be explained more fully under Task VI.

#### Task I--Transmittances

##### a. Oxygen "A" Band.

The preliminary calculations reported last quarter have been completed. Further work is dependent upon developing models for the spectral response of the S191 in this spectral interval and the receipt of useful satellite data with which the calculations can be compared.

##### b. 2.0 $\mu\text{m}$ CO<sub>2</sub> Band.

Work has resumed on modeling this band. We hope to complete preliminary calculations during the April-June quarter.

#### Task II--Scattering Calculations

This task has been completed.

#### Task III--Cloud Models and Return Signals

##### a. Cloud Models.

This task has been completed.

##### b. Returned Signals.

Pending completion of Task Ib, we plan to combine the results of Tasks I, II, and IIIa with appropriate instrument spectral response data to simulate results.

#### Task IV--Deconvolution Procedure

More spectral response data for the S191 have been received this quarter and it appears that in the "A" band deconvolution is necessary. We are currently attempting to model the spectral response shape.

#### Task V--Background Meteorological Data

Weekly weather maps for Skylab 2, 3, and 4 data periods have been received. This permits an analysis of the synoptic situation and inference of surface pressure for the snow reflectance data. Pilot reports were obtained for January 25 and February 1, 1974.

#### Task VI--Analysis of Satellite Data

After a considerable effort we were able to read the data tapes and print out radiances and wave lengths. At this point two additional problems arose. The first was that the radiance values were much too low. Sample calculations indicated cloud albedos of around one or two percent. The second problem was inadequate spectral resolution in the "A" band region of the spectrum. Accordingly we have requested copies of the raw data tapes.

#### Travel

No travel was performed during this reporting period.

Quarterly  
Contractor Financial Management Report

Contract Number: T-4715B

Contractor: National Oceanic and Atmospheric Administration  
National Environmental Satellite Service  
Washington, D. C. 20233

Total Estimated Cost: \$41,800

Task Description: Cloud Physics Investigation Utilizing Skylab Data

Prepared by: H. J. Klassen

Date: April 8, 1974

For Quarter Ending: March 31, 1974

	<u>Most Recent Quarter</u>	<u>Cumulative To Date</u>	<u>Estimated Total</u>
Hours			
Investigator	288	976	1,330
Other	150	885	1,370
Total	438	1,861	2,700
Costs			
Labor	4,892	19,360	27,800
Material	-0-	12	200
Data Processing	24	5,704	8,120
Travel	-0-	-0-	1,200
Equipment Rental	-0-	-0-	-0-
Equipment Purchase	-0-	-0-	-0-
All Other	789	3,075	4,480
Total	5,705	28,151	41,800